

acid and ethylamine, differs in some of its physical properties from the ethylurea obtained by the action of ammonia on cyanic ether, although both substances yield under the influence of chemical agents exactly the same products of decomposition, viz. carbonic acid, ammonia, and ethylamine.

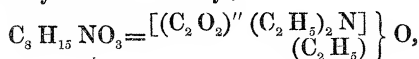
The experiments described in this Note were made in Dr. Hofmann's laboratory.

IX. "Notes of Researches on the Poly-Ammonias."—No. XI.

Isomerism of Diatomic Compounds. By A. W. HOFMANN,
LL.D., F.R.S. Received May 24, 1861.

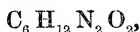
The experiments which Dr. Volhard has described in the previous Note, remind me of some analogous observations which I made some time ago in the case of oxalyl-derivatives.

While engaged in experiments on the separation of the ethyl bases by means of oxalic ether, which I have had the honour of laying before the Royal Society *, I had collected a considerable quantity of diethyloxamate of ethyl,

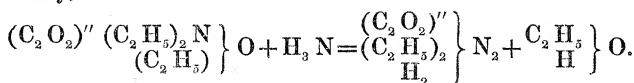


which is formed by the action of oxalic ether upon diethylamine. I have studied the deportment of this compound under the influence of several agents.

When digested with alcoholic ammonia in sealed tubes, diethyloxamate of ethyl is rapidly converted into a crystalline compound, which on analysis was found to contain



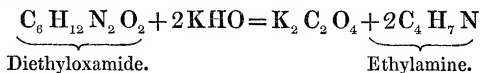
showing that the reaction is accomplished in the form pointed out by theory,



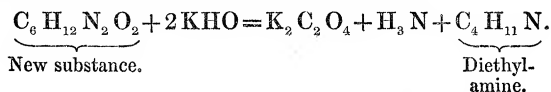
The new compound then has the composition of diethyloxamide, but it is far from being identical with the splendid body which is formed by the action of oxalic ether on ethylamine. It differs from the latter in many of its properties, being in fact much more soluble

* Proceedings, vol. xi. p. 66.

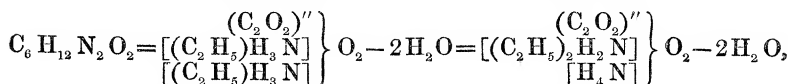
in water, and also by its transformations. Under the influence of hydrate of potassium the diethyloxamide of Wurtz splits into oxalic acid and ethylamine,



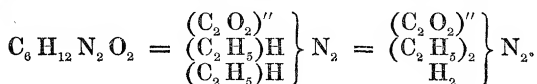
whilst under the same circumstances the new compound furnishes an oxalate together with ammonia and diethylamine,



It is thus seen that the isomeric diamides in general exhibit the relation which Dr. Volhard has so well developed for the ureas. The nature of these substances is determined by their genesis,



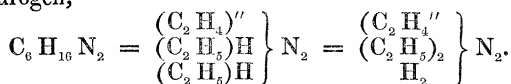
which is readily traced in their products of decomposition. The following formulæ might indicate the difference in the construction of the two bodies which form the subject of this Note,



It is obvious that similar cases of isomerism must obtain among the diamines or diatomic bases. Thus the formula



can represent two very similar bases, the constitution of which differs, inasmuch as the one owes its origin to the association of two molecules of ethylamine, while the other arises from the union of one molecule of ammonia and one molecule of diethylamine, the connecting link being in both cases the diatomic ethylene-molecule which replaces the hydrogen,

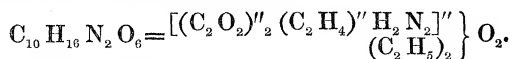


The facility with which the ethylated ammonias may be separated by means of oxalate of ethyl, has induced me to study the action of this ether on the diatomic bases. Ethylene-diamine, when treated

with oxalate of ethyl in the presence of alcohol, is converted into a compound crystallizing in long needles, to which analysis assigns the formula



This substance is the ethyl-ether of a diatomic amidic acid, *i. e.* the oxamethane of ethylene-diamine,

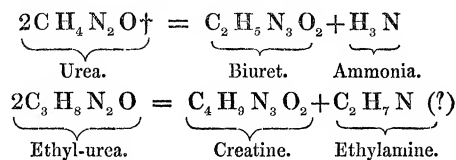


The action of monamines and diamines upon this compound gives rise to the formation of white insoluble bodies, similar to oxamide. I have not analysed these substances, the composition of which is sufficiently indicated by the logical development of the theoretical notions acquired in the study of the series of monatomic compounds. The action of oxalate of ethyl on ethylene-diamine produces, however, in addition, a new class of organic bases of a higher order, containing both ethylene and oxalyl. The examination of these bases, which are not represented among the monatomic compounds, will be the subject of a later communication.

X. "Notes of Researches on the Poly-Ammonias."—No. XII.

Action of Cyanate of Ethyl on Urea. By A. W. HOFMANN, LL.D., F.R.S. Received May 24, 1861.

The facility with which creatine, under the influence of chemical agents, furnishes urea or its products of decomposition, has led to many attempts at reproducing the flesh-base from urea. Weltzien* has endeavoured to effect this transformation by submitting ethyl-urea to the action of heat, expecting that this compound would exhibit a change analogous to one of the phases of the transformation of normal urea, under the influence of heat,



The reaction, however, appears to be accomplished in another form.

* Ann. der Chem. und Pharm., c. 191.

† H=1; O=16; C=12, &c.